

22''·64, at 2° distance. The mean height of the chromosphere near the point of last contact was 10''·68, prominences being at 2° and 1° 30' on either side, whose maximum heights were 33''·32 and 45''·28 respectively.

The director of the Lyons Observatory, M. Ch. André, has kindly sent me an account of his observations during the same eclipse; and I venture, with his permission, to extract a few lines from his letter, as they are of considerable interest at the present moment.

“ Une observation, que nous venons de faire lors de l'éclipse partielle du 16 mai 1882, vient à l'appui de ces mêmes idées [explanation of the phenomena of the black drop by M. André]. Si l'on cherche à observer l'éclipse d'une tâche solaire par la lune en notant par exemple le contact d'un des bords de la tâche avec le bord de l'échancrure solaire, on observe constamment un ligament noir analogue à celui du passage de *Vénus* ou de *Mercure*. Après réflexion, ce fait, qui m'avait d'abord surpris, est très simple. Le phénomène en question est un effet du même ordre que celui du passage de *Vénus* : il en diffère en ce que

“ 1° L'obscurité de la tâche est moindre que celle de *Vénus*.

“ 2° Le corps obscur est fixe et le corps lumineux mobile.

“ 3° Les deux corps qui arrivent au contact tournent ici leurs courbures en sens inverse.

“ Les ligaments ne sont donc point, comme quelques astronomes le croient, des apparences spéciales aux passages des planètes sur le soleil. Ce sont bien certainement des phénomènes de diffraction dus à l'appareil optique qui sert aux observations ; on doit les traiter comme tels.”

Another remark in the same letter also bears upon this subject. “ L'observation du passage de *Mercure* à Ogden du 4 mai 1878 a complètement vérifié toutes les conséquences que j'avais déduites de mes expériences.”

*Stonyhurst Observatory:*  
1882, June 6.

#### *Further Spectroscopic Observations of Comet a, 1882 (Wells), made at the Royal Observatory, Greenwich.*

*(Communicated by the Astronomer Royal.)*

The spectrum of this interesting object has been observed on four occasions since the date of the first Note—viz. on May 13, May 20, May 31, and June 7. The most striking feature which it has exhibited has been the remarkable development of a bright line in the yellow, apparently coincident with the D lines of sodium.

This line was first remarked on May 31, when two measures of its position were obtained with the single-prism spectroscope. These gave its wave-length as 5902·5 and 5903·0 tenth-metres, or 10·5 and 11·0 tenth-metres from D towards the red. The measures were made with great difficulty, owing to the exceed-

ingly awkward position of the spectroscope, and are hence very rough. The bright line seemed two or three times as bright as the continuous spectrum on which it appeared.

Another view of the comet was secured early in the morning of June 8 (at about June 7, 15<sup>h</sup> 40<sup>m</sup>), when the bright line had become of the most extraordinary brilliancy, and so far outshone the continuous spectrum that the comet might almost be said to shine by monochromatic light. The telescopic appearance of the comet was in strict accordance with this view, as it showed a distinct planetary disk of an orange color, nearly as deep and vivid as that of *Mars*. The comet was seen in the finder till 15<sup>h</sup> 50<sup>m</sup>, 4<sup>m</sup> after sunrise. Only one measure could be obtained of the position of the line, and this measure was unfortunately rendered very rough from the difficulties of the comet's position, &c. The resulting wave-length was 5894.5 tenth-metres, assuming 5892.0 as the wave-length of the D lines. The displacement, which was towards the red, would indicate a motion of recession of 79 miles per second. The "Half-prism" spectroscope, with one half-prism, in the direct position, as used for measures of displacement of the lines in stellar spectra, was employed; magnifying power 14°, dispersion 18½° from A to H.

Besides this remarkable bright line, several trifling irregularities in the continuous spectrum were seen or suspected on different occasions.

On April 24, as stated in the former Note, two ill-defined maxima were remarked in the green and greenish-blue.

On May 13 one such ill-defined maximum was suspected near E, a little to the red of the sharp edge of the green band obtained from a Bunsen-flame.

On May 20 the spectrum presented much the same appearance, except that the fainter districts bounding the two maxima above mentioned rather attracted attention and three minima were observed instead of two maxima. These minima, or faint dark bands, seemed fairly sharp at the edges. Three measures were obtained of the most distinct, which was, however, an exceedingly difficult object. These gave its wave-length as 4818, 4811, and 4855 tenth-metres respectively. The middle dark band was measured as about 5500 tenth-metres. No measures could be obtained of the third dark band, which was near D but on the blue side of it.

The spectrum of the nucleus extended from about  $\lambda$  4300 to  $\lambda$  6150. The spectrum of the tail was also continuous, but visible only in the green. It might be mistaken for the green band of the Bunsen-flame, but seemed too regular and to extend too far towards the red.

On May 31 the spectrum presented a very similar appearance to that shown on May 20, but, being much brighter, details were better seen.

Two dark spaces were seen near F; the less refrangible one was measured, and its wave-length determined as 4862 tenth-